

APPENDIX C

CITY OF DANBURY
PUBLIC WORKS DEPARTMENT

CHECKLIST
WATER AND SANITARY SEWER PUMPING STATIONS

CITY OF DANBURY
PUBLIC WORKS DEPARTMENT

CHECKLIST

WATER AND SANITARY SEWER PUMPING STATIONS

- Notes:
1. Every item may not apply to a particular situation.
 2. This list is meant to be used as a guide only. It is not all inclusive. Each pumping station to be constructed must be designed for the particular uses and needs of its situation.
 3. The design of pumping stations is to be consistent with the City's comprehensive sanitary sewer and water plans or any updated information, should it become available.

A. GENERAL

1. Five (5) copies of the operation and maintenance (O&M) manual prepared by the engineer and in a form acceptable to the Public Works Department of the City are to be submitted to the City upon completion of the station. Copies are to be bound in 3 ring style binders.
2. The construction of the pumping station is to be supervised by a State of Connecticut licensed professional engineer approved by the City. The engineer is to be at the job site whenever work is being done.
3. Calculations for the sizing of the wet well are to be provided for sewer pumping stations.
4. Complete plans and written specifications are to be submitted.
5. Specifications are to include all testing procedures for the pumping station.
6. Shop drawings are to be reviewed and approved by the engineer before they are submitted to the City for approval.
7. The City of Danbury Building Department is to review and approve all plans.
8. State of Connecticut Department of Environmental Protection approval of sewer pumping station plans is required. State of Connecticut Department of Health approval of water pumping station plans is required.
9. Record drawings (one mylar and one black line print) of the completed station are to be submitted to the City.
10. Two days of owner orientation are to be provided to the City prior to the turnover of the station to the City.
11. Buoyancy calculations on the wet well structure are to be provided.

12. The station must be fully operational and have been checked out by the engineer prior to the owner orientation for the City.

B. SITE PLAN

1. Adequate area is to be provided in sewer pumping stations for future wet well expansion, if warranted.
2. Site layout is to be such that the area in front of the station can be easily plowed via the entry gate.
3. Adequate room is to be provided in front of the station to allow trucks to back up to the doors for removal and replacement of equipment.
4. Planning Commission approval of the pumping station site plan is required.
5. The site is to be landscaped.
6. The developer is responsible for the first two cuttings of grass.
7. The driveway and parking area are to be paved.
8. Sidewalks are to be installed between all doors and as warranted elsewhere.
9. An eight (8) foot high green vinyl clad chain link fence is to be installed around the structure.
10. A twelve (12) foot wide slide type entry gate is to be provided in the fence.

C. BUILDING

1. Double insulated doors are to be provided. Doors are to be a minimum 36 inches wide and wide enough to pass all equipment. A single brass saddle is to be installed under the doors.
2. The doors are to be recessed three (3) to four (4) feet with a canopy over the entrance and a stoop.
3. The contractor is to use his/her own locks and keys during construction. When the station is turned over to the City, the contractor is to replace these with the City's standard locks and keys.
4. The exterior of the building is to be brick the color of which is to be approved by the City.
5. A concrete roof deck is to be provided.
6. Flashing is to be lead coated copper.

7a. The color code is to conform to the following:

floor ---	Vista Green	Pittsburgh Paints No. 2367
pedestals ---	Safety Orange	Pittsburgh Paints No. 23810
pipe ---	Blue Finesse (water)	Pittsburgh Paints No. 2075
	Slate Gray (sewage)	Sherwin Williams metal latex semigloss enamel No. MC71
ceiling ---	Spring Yellow	Sherwin Williams No. BM19-9
walls ---	Spring Yellow	Sherwin Williams No. BM19-9
doors ---	Walnut Brown	Sherwin Williams No. BM72-15
door jams ---	Walnut Brown	Sherwin Williams No. BM72-15
drains ---	Black	Sherwin Williams industrial enamel No. 617-0203

7a. The color for pipe markings (letters and arrows) is as follows:

for gray pipe ---	black letters and arrows
for blue pipe ---	white letters and arrows
for black pipe ---	white letters and arrows

8. One unopened gallon of each color of paint is to be supplied to the City.
9. All surfaces are to be painted.
10. One outdoor light is to be provided above each door.
11. The generator and controls are to be in a room separate from the pump room. An outside generator with a shed roof is an acceptable alternative.
12. Roof insulation is to have an R value of 20 (minimum). Wall insulation is to have an R value of 13 (minimum).
13. Masonry block is to be solid or insulated hollow block.
14. The generator exhaust is to be out the rear or side of the building.

15. Gutters and leaders are to be provided as required and are to drain away from the building.
16. Adequate room to maneuver and maintain all equipment is to be provided in each room.
17. The building is to have no windows.
18. An identification sign which meets City specifications is to be mounted on the outside of the building.
19. Louvers are to be spring closed in the event of a power failure. Louvers are to be vandalproof and equipped with insect screens.

D. WET WELL AND PUMP ROOM

1. A forced draft ventilation system conforming to applicable regulations is to be provided for the wet well and pump room. An exterior vent for the wet well is to be provided.
2. Wall thimbles are to be installed for all inlet and outlet piping.
3. Water stops are to be installed for all concrete joints. Plans are to show construction joint locations.
4. Cast in rungs or an aluminum ladder with stainless steel hardware are to be installed in the wet well if a basket strainer is provided. If a bar rack is installed, stairs are to be constructed.
5. All lighting and equipment in the wet well and in the pump room are to be explosion proof.
6. If the wet well is deep, a platform may be required.
7. The strainer hatch is to be centered over the basket strainer.
8. Rungs are to be installed in pipe trenches where applicable (water station).
9. A hose bib is to be provided in the wet well.
10. A light is to be provided in the wet well.
11. The pump area and floors are to be pitched to drain to a sump area from which water will drain by gravity or be removed by a sump pump.

E. EQUIPMENT

1. A minimum of two pumps (one backup) are to be installed.

2. Flygt pumps or approved equals are to be installed in sanitary sewer pumping stations. Aurora pumps or approved equals are to be installed in water stations.
3. The City is to be provided with one spare pump.
4. Pumps are to have mechanical seals.
5. Two pressure gages per pump are to be provided.
6. Certified pump curves are to be supplied to the City.
7. A continuous means of pulling the pump chain is to be provided. An acceptable alternative is a stainless steel cable with a winch. A pump lift hook is to be installed.
8. Pump guide rail is to be galvanized with stainless steel anchors. Pump guide rail bracing is to be installed as warranted.
9. Float elevations are to be provided.
10. The float system should be set up consistent with the attached diagram.
11. A permanent float schematic drawing for sewer or a permanent alarm sequence elevation schematic drawing for water is to be provided for the station.
12. A generator with an automatic transfer switch is to be provided.
13. The fuel tank provided with the generator shall also have a manual transfer pump to be activated manually in the event of an emergency. If an underground fuel tank is installed, a day tank with an electric supply and hand crank is to be provided.
14. A remote level gage is to be provided for the fuel tank where applicable.
15. Local pump and generator running hour meters are to be provided.
16. All equipment shall be BIF.
17. If a basket strainer is to be used, a spare basket is to be provided to the City.
18. Baskets are to have separate chain hoist arrangement and lifting ring.
19. Basket strainers are to be aluminum.
20. Basket strainers are to be set such that the top of the strainer is set below the invert of the inlet pipe.
21. A detail is to be provided which shows how the basket strainer will be removed and replaced.

22. The pump station is to be equipped with a tripod and harness arrangement so that when employees either enter a wet well or meter pit, the tripod and harness can be used consistent with confined space entry requirements.
23. Provisions for odor control are to be furnished. This means that odor control equipment should be installed and capable of working. It will be the decision of the City as to whether or not this equipment should be functional.
24. All equipment is to be labeled.
25. The control room is to be furnished with the following:
 - a. wall mounted desk with lift top
 - b. storage cabinet
 - c. telephone service
 - d. battery operated clock
 - e. fire extinguisher
 - f. sink and hot water
26. In sewer pumping stations, two fully automatic, one half hour Scott air packs with cases mounted on the wall are to be provided.
27. All hardware is to be stainless steel.
28. Two heaters are to be installed in each room. Each heater is to have a separate breaker and a separate thermostat.
29. Hatches and gratings are to be aluminum. Gratings are to be a minimum 1.5 inches thick.
30. Hatch access doors are to be Bilco doors with provisions for padlocks and drains. They are to be equipped with safety chains.

F. ELECTRICAL

1. Fans in wet wells, vaults, etc. are to be operated by light switches with manual overrides.
2. A minimum of 6 spare breakers are to be provided.
3. Power outlets are to be provided inside the building.
4. All controls are to be a brand supplied locally.

5. Electric and gas meters are to be located outside of the building.
6. An outside electric outlet is to be provided.
7. A permanent final electrical diagram is to be provided to be kept in the station.
8. The electrical room housing the instrumentation may also house the generator but must be a separate room from the pump room and be gas tight. Separate buildings will be accepted.

G. ALARMS

1. A general alarm is to be sent to West Lake Water Treatment Plant.
2. All alarm contacts are to be normally closed.
3. A key operated disalarm intrusion alarm is to be provided.
4. A master switch is to be provided inside the building which will turn off all alarms to West Lake Water Treatment Plant.
5. In a water pumping station, the following alarms are to be provided (see attached diagram):
 - a. intrusion alarm with adjustable delay
 - b. fire alarm
 - c. power failure alarm with adjustable delay
 - d. temperature alarm with adjustable high/low
 - e. flooding in building alarm (flooding or sump pump failure)
 - f. high water alarm which also turns pumps off
 - g. low water alarm which also starts pump
 - h. high system pressure alarm also shuts everything down
6. In a sanitary sewer station, the following alarms are to be provided.:
 - a. intrusion alarm with adjustable delay
 - b. fire alarm
 - c. power failure alarm with adjustable delay

- d. temperature alarm with adjustable high/low
- e. high water alarm which also turns pumps on
- f. low water alarm which also shuts pumps off

H. PLUMBING

1. The domestic water meter is to be located inside the building.
2. A backflow prevention valve is to be installed on the domestic water service.
3. Double disc rising stem valves are to be installed in a valve vault. Valves are to open left.
4. Valves are to be Mueller valves meeting AWWA C500 or approved equal.
5. Line valves are to be installed on piping outside the building for water lines and sanitary sewer force mains.
6. All water service pipe is to be copper.
7. A yard hydrant or outside hose bib is to be provided as determined by the City.
8. Water main and force main installations are to be tested at a pressure 100 psi over the normal operating pressure for a period of 6 hours.
9. A flowmeter with appropriate bypass arrangement is to be provided.
10. In water stations, automatic air relief valves are to be installed.
11. In water stations, surge relief valves are to be piped outside the building.
12. A valve is to be installed to each side of a pump.
13. Check valves in sewer stations are to have swing arms.

I. RECORDERS/ CHARTS / METERS

1. Running hour meters are to be provided for generators, pumps and chemical feed units.
2. Flow recorders and hour meters should conform to the attached information (see Appendix).
3. In a sanitary sewer pumping station, the following are to be provided:
 - a. flow chart - 7 day

- b. totalizer and recorder - to include indicator of instantaneous flow
- c. a year supply of charts
- d. pressure gages - no recorders
- e. every gage is to have a Ray Pressure Snubber Model No. 1
- f. manual shut off valve before pressure gage

4. For a water station with pumping to atmospheric storage, the following are to be provided:

- a. In the station
 - i. flow totalizer and recorder with an indicator of instantaneous flow
 - ii. flow charts - 7 day
 - iii. year supply of flow charts
 - iv. tank level recorder - 7 day
 - v. pressure gages on suction and discharge lines
 - vi. manual shut off before pressure gage
- b. at West Lake Treatment Plant
 - i. tank level recorder - 7 day
 - ii. tank level indicator
 - iii. flow rate recorder - totalizer and instantaneous indicator

5. For a water station with a hydropneumatic tank, the following are to be provided:

- a. In the station
 - i. flow totalizer and recorder with indicator of instantaneous flow
 - ii. flow recorder - 7 days
 - iii. year supply of charts
 - iv. pressure recorder - 7 day
 - v. instantaneous pressure reading

b. At West Lake Water Treatment Plant

- i. pressure recorder - 7 day
- ii. instantaneous pressure reading

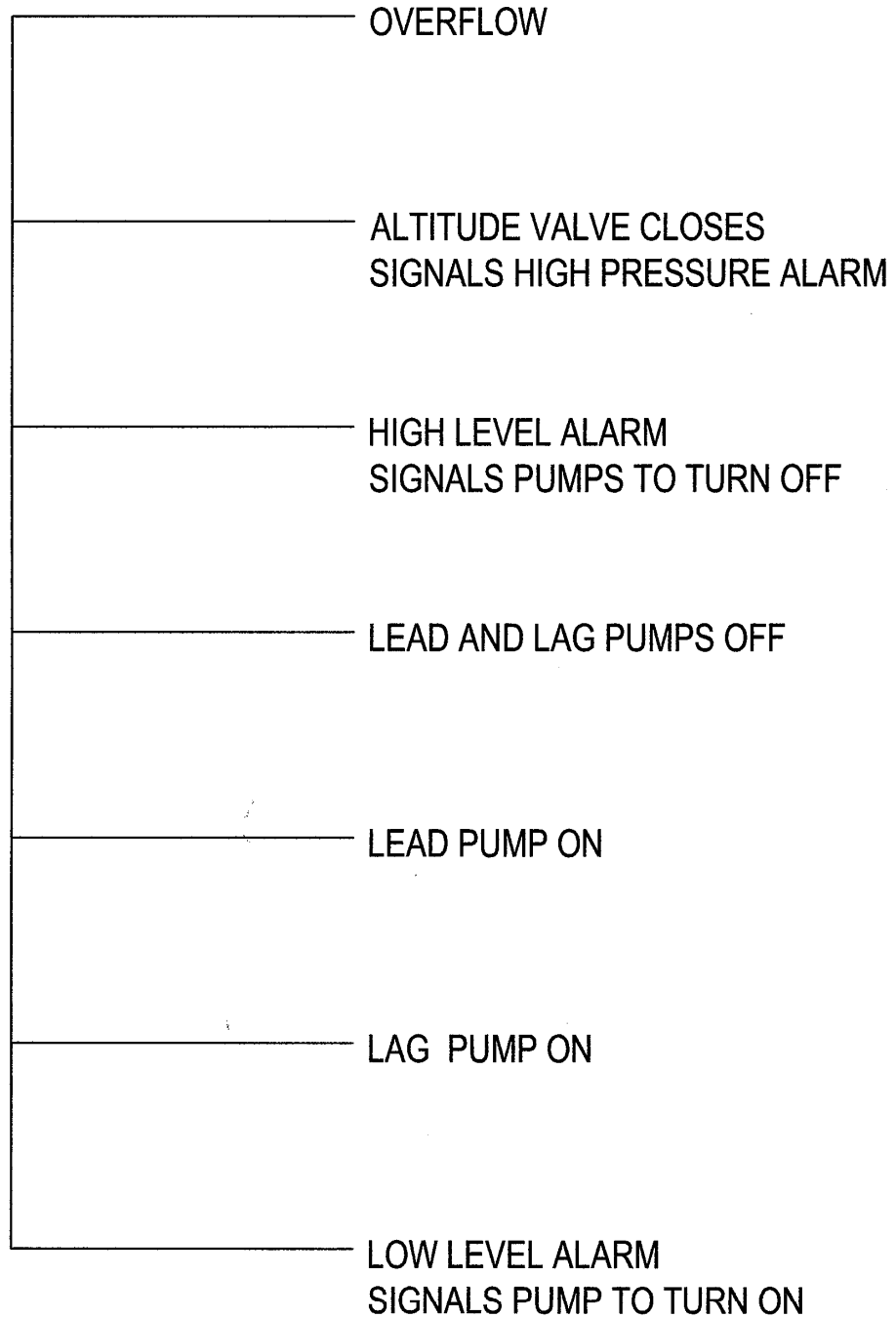
J. VALVE VAULTS /METER PITS

- 1. Vaults and pits are to be insulated.
- 2. They are to be capable of handling H-20 loadings if warranted.
- 3. They are to have positive means of draining. Drains are to be in the floor. Gas traps are to be installed if warranted.
- 4. Access doors are to be Bilco with removable key and drain or approved equal. Manhole frames and covers are not acceptable.
- 5. A power outlet is to be provided.
- 6. A light is to be provided.
- 7. All fixtures and equipment are to be explosion proof.
- 8. Ventilation is to be provided.
- 9. A BIF flowmeter and bypass are to be installed.
- 10. A Dresser adapter is to be installed on one side of the flowmeter for easy removal of the flowmeter.
- 11. Pipes and fittings are to be adequately supported.
- 12. A space heater is to be provided.
- 13. Cast in rungs or an aluminum ladder are to be provided.

5/31/88
retyped 11/12/96
revised 5/5/06

SUGGESTED SCHEMATIC
ALARMS AND FLOAT SYSTEM
WATER PUMPING STATION

4/10/2006



**SUGGESTED SCHEMATIC
ALARMS AND FLOAT SYSTEM
SANITARY SEWER PUMPING STATION**

4/10/2006

